PHYSICAL SCIENCE **DSHS**
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Balancing and Reaction Type PRACTICE

Law of Conservation of Mass (or Matter) states that matter cannot be created or destroyed only rearranged through chemical reactions. This means that in a chemical reaction the amount of reactant you start with must equal the amount of product that you end with. This requires the chemical equation representing the chemical reaction to be balanced.

Balancing chemical equations involves counting the atoms of each element and making sure that they are equal on both sides. If they are, the equation is said to be "balanced." If not, then the equation must be balanced **by adding coefficients only**. NEVER change the subscript number of a formula when balancing, this changes the compound.

There are four main types of reactions that have been discussed in class. Using the example provided for a synthesis reaction, write a brief description of what happens in each of the other types of reactions.

Synthesis: In a synthesis reaction two simple substances are coming together to form a more complex compound
Decomposition: _____
Single replacement: _____
Double replacement: _____

1. _____H_2 + _____Cl_2 ⟶ _____HCl Reaction Type _____

   H = H =
   Cl = Cl =

2. _____N_2 + _____H_2 ⟶ _____NH_3 Reaction Type _____

   N = N =
   H = H =

3. _____Li + _____$FeBr_2$ ⟶ _____LiBr + _____Fe Reaction Type _____

   Li = Li =
   Fe = Fe =
   Br = Br =

4. _____Al + _____HCl ⟶ _____$AlCl_3$ + _____H_2 Reaction Type _____

   Al = Al =
   H = H =
   Cl = Cl =

5. _____Li + _____N_2 ⟶ _____Li_3N Reaction Type _____

   Li = Li =
   N = N =

6. _____C_5H_{12} + _____O_2 ⟶ _____CO_2 + _____H_2O Reaction Type _____

   C = C =
   H = H =
   O = O =

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7. _____Al_2O_3 ⟶ _____Al + _____O_2 Reaction Type _____

Al = 4 Al =
O = 6 O =

8. ____ SnO_2 + ____ H_2 ⟶ ____ Sn + ____ H_2O Reaction Type _____

Sn = Sn =
O = O =
H = H =

9. ____ NH_3 + ____ O_2 ⟶ ____ NO + ____ H_2O Reaction Type _____

N = N =
H = H =
O = O =

10. ____ $SeCl_6$ + ____ O_2 ⟶ ____ SeO_2 + ____ Cl_2 Reaction Type _____

Se = Se =
Cl = Cl =
O = O =

11. Reaction Type _____

____ C_2H_6 + ____ O_2 ⟶ ____ H_2O + ____ CO_2

C = C =
H = H =
O = O =

12. ____ CH_4 + ____ O_2 ⟶ ____ CO_2 + ____ H_2O

Reaction Type _____

C = C =
H = H =
O = O =

13. ____ Al + ____ O_2 ⟶ ____ Al_2O_3 Reaction Type _____

Al = Al =
O = O =

14. ____ Al + ____ HCl ⟶ ____ $AlCl_3$ + ____ H_2 Reaction Type _____

Al = Al =
H = H =
Cl = Cl =

15. ____ H_3PO_4 + ____ HCl ⟶ ____ PCl_5 + ____ H_2O Reaction Type _____

H = H =
P = P =
O = O =